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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,753	09/21/2005	Sumie Suda	278290US0XPCT	1304
22850 7590 10/26/2007 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER FOGARTY, CAITLIN ANNE	
			ART UNIT 4116	PAPER NUMBER
			NOTIFICATION DATE 10/26/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/549,753	<b>Applicant(s)</b> SUDA ET AL.	
	<b>Examiner</b> Caitlin Fogarty	<b>Art Unit</b> 4116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/21/2005, 8/07/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status of Application***

1. Claims 1 – 6 are pending and presented for the examination.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

3. The two information disclosure statements (IDSs) were submitted on September 21, 2005 and August 7, 2007, respectively. These submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner. Please refer to applicant's copy of form PTO-1449 submitted herewith.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 1 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimura et al. (US 6,338,763 B1).

In regards to claims 1 and 4, the abstract, col. 2 line 13 – col. 4 line 14, and Table 4 Example 22 of Hashimura et al. disclose a steel wire for high-strength springs having superior workability, the steel wire having tempered martensite, with a clearly overlapping composition as shown in the table below.

Element	Claim 1 (mass %)	Hashimura et al. (mass %)	Overlapping Range (mass %)
C	0.53 – 0.68	0.4 – 0.7	0.53 – 0.68
Si	1.2 – 2.5	1.2 – 2.5	1.2 – 2.5
Mn	0.2 – 1.5	0.1 – 0.5	0.2 – 0.5
Cr	1.4 – 2.5	0.4 – 2.0	1.4 – 2.0
Al	$0 < \text{Al} \leq 0.05$	0.0001 – 0.005	0.0001 – 0.005
Ni	$0 < \text{Ni} \leq 0.4$	0.1 – 2.0	0.1 – 0.4
V	$0 < \text{V} \leq 0.4$	0.050 – 0.4	0.050 – 0.4
Mo	0.05 – 0.5	0.1 – 2.0	0.1 – 0.5
Nb	0.05 – 0.5	0.005 – 0.05	0.05
Fe + impurities	Balance	Balance	Balance

Hashimura et al. also disclose that the ratio ( $\sigma_{0.2}/\sigma_B$ ) of 0.2% proof stress ( $\sigma_{0.2}$ ) to tensile strength ( $\sigma_B$ ) is not less than 0.8 and not greater than 0.9. This overlaps with the ratio ( $\sigma_{0.2}/\sigma_B$ ) recited in claim 1 of 0.85 or lower. Although Hashimura et al. do not specifically disclose that the prior austenite grain size number is 11.0 or larger, it would have been

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obvious because the composition of the steel wire taught in Hashimura et al. overlaps with that of claim 1. It is well known that courts have generally recognized that overlapping ranges of compositions give rise to obviousness. Therefore, the claimed invention taken as a whole would have been obvious in view of the teachings of Hashimura et al.

Claim 2 is identical to claim 1, except the composition of Mn in claim 2 is 0.5 – 1.5 mass% which has an overlapping range of 0.5 mass % with Hashimura et al.

In regards to claim 3, Hashimura et al. do not disclose the steel wire according to claim 1, wherein the 0.2% proof stress ( $\sigma_{0.2}$ ) is raised by 300 MPa or more when annealing at 400°C for 20 minutes is conducted. However, that is a process step, which does not have patentable weight in a product-by-process claim. See MPEP 2113. Nonetheless, since Hashimura et al. disclose an overlapping composition and a ratio ( $\sigma_{0.2}/\sigma_B$ ) that overlaps with the ratio recited in claim 1, it would have been obvious that the 0.2% proof stress ( $\sigma_{0.2}$ ) would be raised by 300 MPa or more when annealing at 400°C for 20 minutes is conducted.

Claims 5 recites the high-strength spring according to claim 4, wherein: the spring has a core part of a hardness Hv ranging from 550 to 700; the spring has a compressive residual stress on a surface thereof at –400 MPa or lower; and the residual stress of the spring is changed from a compression to a tension at a depth of from 0.05 mm to 0.5 mm from the surface of the spring. Although Hashimura et al. do not specifically disclose the details recited in claim 5, they would have been obvious

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because the composition of the steel wire taught in Hashimura et al. overlaps with that of the instant application.

Claim 6 recites the high-strength spring according to claim 4, wherein: the spring has a nitriding layer on a surface thereof; the spring has a hardness Hv ranging from 750 to 1150 on the surface thereof; the spring has a core part of a hardness Hv ranging from 550 to 700; the spring has a hard layer of a hardness Hv larger than the hardness of the core part by 15 or more, the hard layer having a depth ranging from 0.02 mm to 0.15 mm; the spring has a compressive residual stress on a surface thereof at -800 MPa or lower; and the residual stress of the spring is changed from a compression to a tension at a depth of from 0.05 mm to 0.5 mm from the surface of the spring. In col. 2 lines 3 – 25 Hashimura et al. disclose a spring made from a steel wire with an overlapping composition with that of claim 1 that has a nitriding layer on the surface. Although Hashimura et al. do not specifically disclose the hardness or residual stress details recited in claim 6, they would have been obvious because the composition of the steel wire taught in Hashimura et al. overlaps with that of claim 1.

Since the claimed compositional ranges for claims 1 – 6 either overlap or are within the ranges disclosed by Hashimura et al., a prima facie case of obviousness exists. See MPEP 2144.05. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the steel wire composition from the steel wire composition disclosed by Hashimura et al. because both steels are used to make springs.

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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8. Claims 1 and 2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 4 of copending Application No. 10/550,019. Although the conflicting claims are not identical, they are not patentably distinct from each other because the composition of the steel wire recited in Application No. 10/550,019 overlaps in scope with the composition of the steel wire recited in claims 1 and 2 of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

9. No claim is allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caitlin Fogarty whose telephone number is 571-270-3589. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CF

A handwritten signature in black ink, consisting of a large, stylized 'V' followed by a series of loops and a long horizontal stroke.

VICKIE Y. KIM  
SUPERVISORY PATENT EXAMINER